

Obs. No species of *Erythrosterna* has hitherto been found, that I am aware of, in Madagascar, or even in South Africa; and I am not acquainted with any previously known Madagascar species of which this could be the undescribed female. I have therefore no alternative but to characterize it as new. I think it quite possible that future naturalists will decline to receive it into the genus to which I have here assigned it; but for the present I believe it cannot be better placed. It has very much the general appearance of the female of the European *Erythrosterna parva*, except that it wants the white spot on either side of the tail, which in that species forms so conspicuous a feature.

My brother's observations on these and the other birds procured by him on his last visit to Madagascar will appear in the forthcoming Numbers of the 'Ibis,' for July and October 1863.

May 26, 1863.

Dr. J. E. Gray, F.R.S., in the Chair.

Mr. R. Swinhoe exhibited a specimen of the rare Wader named *Pseudosclopax semipalmatus*, in full summer plumage, obtained in Northern China.

The following papers were read:—

1. SYNOPTICAL LIST OF THE SPECIES OF FELIS INHABITING THE INDIAN REGION AND THE ADJACENT PARTS OF MIDDLE ASIA. BY E. BLYTH.

Having enjoyed favourable opportunities of studying most of the Asiatic species of *Felis*, and considering that they are in need of elucidation, chiefly from casual or individual varieties (which do not exemplify particular races) having been described as peculiar species, I trust that a list of what I am led to regard as species, with their numerous synonyms in some instances, will prove acceptable to students of zoology.

The most different from the rest is—

1. FELIS JUBATA, Schreber.

F. guttata, Hermann.

F. venatica, A. Smith.

F. fearonis (?), A. Smith, apud Gray.

Chita, or "Cheetah," or "Hunting Leopard" of authors, though *F. pardus* is more commonly known by the former appellation in many parts of India. Original Παρθίη et *Leopardus antiquorum*; the latter name founded on the notion (still current in Barbary) of

its being a mixed race produced between the Lion and the female Pard.

Hab. All Africa; Syria; Arabia; Mesopotamia; Persia; West and South India; Ceylon (auct. Baker*).

The rest of the Asiatic Cats may be divided into, the *Pardine series* (inclusive of the Lion and Tiger), with more robust form of skeleton, and comparatively rounded and obtuse ear-conch; and the *Lyncine series* (inclusive of the Domestic Cat), with constantly a more slender form of skeleton, and larger and more pointed ear-conch, which, in general, is more or less tufted.

Pardine series.

2. FELIS LEO, L.

Leo barbarus, senegalensis, gambianus, capensis, asiaticus, et goojerattensis auctorum.

Varies much in shade of hue and development of mane, and of hair along the flanks, in the male sex—some individuals (both in Asia and Africa) being permanently maneless, or comparatively so†, though it does not appear that these anywhere constitute a distinct and established race, any more than do occasional beardless individuals among the ordinarily bearded races of humankind.

Hab. South Asia and Africa, and formerly (within historic times) the south-east of Europe. Within the present century, distributed over much of Central, West, and North-west India; but now confined in that country to the peninsula of Guzrat, unless a last remnant still maintains a lingering existence in the jungles bordering the Sind River in Bundelkund, which I now consider doubtful. Eastward of the north-west provinces of the Bengal Presidency, the Lion has not been observed in any part of Asia.

3. FELIS TIGRIS, L.

Hab. Peculiar to Asia, extending westward as far as Mount Ararat. A few are annually killed in Turkish Georgia. More numerous in the Elburz Mountains, south of the Caspian (the ancient Hyrcania). North of the Hindu Kosh, Tigers occur in Bokhara, and proved troublesome to the Russian Surveying Expedition on the shores of the Aral in midwinter. They are also found on the banks of the Irtisch, and in the Altai region; and thence eastward to Amur-land, or Amuria (where very destructive to cattle), and round by China and Indo-China to India, southward of the Himalayas; but the species does not extend into Ceylon. It inhabits the Malayan peninsula, Sumatra, Java, and Bali, but is not met with in Borneo, neither does it occur in the great Tibetan region of high Central Asia.

* 'Eight Years' Wanderings in Ceylon,' by S. W. Baker (1855), p. 118. This author clearly distinguishes between the Chita and the Pard.

† *Vide* Layard's 'Discoveries in the Ruins of Nineveh and Babylon,' p. 487; also Barth's 'Travels and Discoveries in North and Central Africa,' i. p. 482; v. pp. 97, 270.

4. FELIS PARDUS, L.

- F. leopardus* et *F. varia*, Schreber.
F. nimr, Ehrenberg.
F. panthera, Erxleben.
F. antiquorum, Fischer.
F. melas, Péron.
F. chalybeata, Hermann.
F. fusca, Meyer.
F. longicaudata, F. Cuvier.
F. pæcilura (?), Valenciennes.
 The Pard, Panther, or Leopard.

(auct. Gray).

Hab. S. Asia and Africa; commonly miscalled "Tiger" in Africa and also in Ceylon. In the Malayan region, it inhabits the peninsula, Sumatra, and Java; but not Borneo.

5. FELIS UNCIA, Schreber.

- F. pardus*, Pallas.
F. panthera, Erxleben (auct. Gray).
F. irbis, Ehrenberg.
F. tulliana, Valenciennes, Comptes Rendus, xlii. 1035.
 The Ounce, or "Snow Leopard."

Hab. Snowy regions of Middle Asia. The animal described by M. Valenciennes was procured in the mountains east of Smyrna.

6. FELIS JAPONENSIS.

- Leopardus japonensis*, Gray, P. Z. S. 1862, p. 262, pl. xxxiii.
Hab. Japan.

7. FELIS DIARDII, Desmoulins; Cuvier, Oss. Foss.

- F. macrocelis*, Temminck.
F. macroceloides, Hodgson.
F. nebulosa, Griffith.

Hab. Mountainous parts of South-east Asia, with the islands of Sumatra and Borneo; Tibet (auct. Hodgson).

N.B. The ground-colour of this animal becomes much more fulvous with age.

8. FELIS MARMORATA, Martin.

- F. charltoni*, Gray.
F. diardii, apud Jardine, Nat. Libr.
F. ogilbii, Hodgson, Calc. Journ. N. H. viii. p. 44.

Hab. Apparently the same range as the preceding species, or perhaps not quite so extensive. And the ground-colour would similarly appear to become more fulvous with age.

9. FELIS BRACHYURA.

- Leopardus brachyurus*, Swinhoe, P. Z. S. 1862, p. 352, pl. xliii.
Hab. Formosa.

10. *FELIS VIVERRINA*, Bennett.*F. viverriceps*, Hodgson.*F. bengalensis*, apud Buchanan Hamilton.*F. himalayana*, Warwick, auct. Jardine, Nat. Libr. (?), nec Gray.*F. celidogaster*, Temm., auct. Gray.*

Hab. India (with Ceylon); Burma (common in the Tenasserim provinces). Found only in the lower valleys of the Himalaya. Malacca and Formosa, apud Swinhoe, P. Z. S. 1862, p. 353.

11. *FELIS BENGALENSIS*, Desmoulins.*F. sumatrana* et *F. javanensis*, Horsfield.*F. minuta*, Temminck.*F. undulata*, Schinz.*F. nipalensis* et *F. pardichrous*, Hodgson.*F. wagati*, Elliot †.

Leopardus ellioti, *chinensis*, *reevesii*, et *Chaus servalinus*, Gray (rufous-tailed variety).

F. nipalensis, Vigors and Horsfield (hybrid?, or Domestic Cat of Nepal †‡).

* Brit. Mus. Catal., but not of Temminck (1855), who recognizes a West-African species as his *F. celidogaster*, to which he refers the figure assigned to *F. chalybeata* in Griffith's English edition of Cuvier's 'Règne Animal,' vol. ii. pl. 2. See 'Esquisses Zoologiques sur la côte de Guinée,' par M. Temminck, 1^{re} partie, les Mammifères, p. 86. *F. himalayana*, Gray, is perhaps *F. celidogaster*, Temm.

† This has been assigned to *F. viverrina*; but it does not appear that Mr. Walter Elliot ever obtained the latter, and he presented me with a living specimen of *F. bengalensis* as his *F. wagati*.

‡ "The Domestic Cat is as common in Nepal as elsewhere, and has no peculiarity worthy of note. Judging by its marks, I should conjecture that it is derived from the *F. nipalensis*; if so, it has lost by domestication the fine ground-colour of that beautiful species."—Hodgson in *Journ. As. Soc. B. i. p. 341*.

Pennant was assured that the male specimen originally described by him "swam on board a ship at anchor off the coast of Bengal. After it was brought to England, it coupled with the female cats, which twice produced young. I saw," he remarks, "one of the offspring, which was marked in the same manner as the male parent; but the ground-colour was cinereous." (*History of Quadrupeds*, i. p. 293.) Various other wild species (both of the *Pardine* and *Lyncine* series) interbreed more or less freely with the Domestic Cat in different countries.

Mr. E. L. Layard (in his 'Catalogue of the South African Museum,' 1862) notices, that "*F. caffra* intermingles freely with the domestic race which has been imported by the European settlers, and the mixed progeny possesses all the ferocity and bloodthirstiness of the wild parent." A hybrid of this kind is in the British Museum Collection, as noticed by Dr. Gray (Catal. 1843, p. 45).

Mr. Walter Elliot, formerly of the Madras Civil Service, assured me of the occurrence of hybrids between the Domestic Cat and *F. chaus*, and also of similar hybrids with *F. rubiginosa* (*vide Journ. As. Soc. B. xvii. pp. 247, 559*). Dr. D. Scott, of the late Bengal Army, and formerly of Hansi, assured me of the occurrence there of hybrids with *F. ornata*, and that many of the Domestic Cats of that part of India were undistinguishable from the wild *F. ornata*, as some of those of the Scottish Highlands are from the European Wild Cat (*vide Jardine, Nat. Libr., Felinae*). I was assured by the late Dr. Kelaart that he had seen a hybrid from *F. viverrina* in Ceylon.

For some remarks on the Domestic Cats of India, *vide Journ. As. Soc. B. xxv. note to p. 443*. The *Chaus pulchella*, Gray, appears to me to be only an Egyptian variety of the Domestic Cat.

Hab. South-east Asia, from Tibet to the great islands of the Archipelago; but perhaps not Borneo.

Varies much in its markings, though scarcely more so than *F. pardalis* and other spotted Cats; while the varieties are linked together by intermediate specimens. The most permanent of them would seem to be that designated *javanensis*, from Java and the Malayan peninsula, which approximates to *F. viverrina* in colouring, except that the under parts are pure white, black-spotted.

12. FELIS JERDONI, nobis, n. s.

Very similar in its markings to the preceding species; but the size of the full-grown animal much smaller—that of *F. rubiginosa*; and the ground-hue of the upper parts grey, untinged with fulvous.

Hab. Peninsula of India. I first detected an adult male and a kitten of this species in the Museum at Madras, and find that there is an adult specimen also in the British Museum.

13. FELIS RUBIGINOSA, Is. Geoffroy; figured by Bélanger.

Hab. Peninsula of India, Coromandel side. (In the British Museum is a specimen labelled from Malacca, collected by Capt. Charlton; but this I very strongly suspect to be a mistake.)

14. FELIS PLANICEPS, Vigors.

Hab. Malayan Peninsula; Sumatra; and Borneo.

15. FELIS AURATA, Temminck.

F. temminckii, Vigors (young).

F. moormensis et *murmensis*, Hodgson.

“Fire Cat” of Burma? (*Mason*).

Hab. South-east Himalaya; Burma (?); Malayan Peninsula; Sumatra; and probably Borneo. A Nipalese specimen in the India Museum is very distinctly and conspicuously spotted.

Lyncine series.

16. FELIS TORQUATA, F. Cuvier; Sykes?.

F. ornata, Gray (Hardwicke's Ill. Ind. Zool.; very bad).

F. servalina, of Jardine (nec Ogilby, nec *Chaus servalinus*, Gray).

F. huttoni, Blyth.

F. ad oxam, Pallas (auct. Gray).

Leopardus inconspicuus, Gray.

Hab. The desert region of North-west India; Dukhun; Hazara country.

The “Desert Cat” of West India (*vide Journ. As. Soc. B. xxv. p. 441*). Colonel Sykes's specimen has much the aspect of a Domestic Cat, perhaps semiwild.

17. FELIS MANUL, Pallas.

F. nigripectus, Hodgson.

Hab. Tibet and East Asia (Amurland).

18. FELIS MEGALOTIS, Temminck.

Hab. Timor (non vidimus).

19. FELIS CHAUS, Gldenstdt.

F. catolynx, Pallas.

F. affinis, Gray.

F. dongolensis, Hemprich & Ehrenberg.

F. caligata (?), Bruce.

F. lybica, Olivier.

F. kutas, Pearson.

F. rppellii, Braudt.

Lynchus erythrotis, Hodgson.

Hab. India ; North Burma (Arakan) ; South-west Asia ; North-east Africa. South Africa, apud Layard (who gives Kuruman as one locality), in addition to *F. cafra*.

N.B. The Egyptian specimen now living in the Society's Gardens is absolutely similar to the common animal of Bengal.

20. FELIS CARACAL, Schreber.

Hab. South Asia and Africa ; Central India.

21. FELIS ISABELLINA, Blyth.

The LYNX of Tibet.

Has the naked pads of the soles of the feet much more developed than in *F. lynx* of Europe.

2. DESCRIPTIONS OF THIRTEEN NEW SPECIES OF BIRDS DISCOVERED IN CENTRAL AMERICA BY FREDERICK GODMAN AND OSBERT SALVIN. BY OSBERT SALVIN, M.A., F.Z.S.

(Plates XXIII., XXIV.)

A partial investigation of the collections made by myself and Mr. F. Godman in Guatemala and the adjacent republics during the latter part of 1861, 1862, and the early part of the present year (1863) has led to the separation of the present thirteen species, which I now propose to describe as new. There are no marked forms amongst them, the greater part being Central American representatives of North or South American species, the only truly South Mexican and Central American genus being that of *Cardellina*, of which I now describe a third species. The specimens were collected at various points, the district of Peten producing the most novelties ; no less than four out of the whole number were obtained in that part. Our collection from there was small, and I think that more remains to be discovered in that remote region than in any other part of Guatemala. The alternations of savannas and forest offer scope for variety not to be met with elsewhere. Where such



1863

PANYPTILA SANCTI-JEROMÆ





1.

2.

1 CARDELLINA VERSICOLOR
2 DENDROICA NIVEIVENTRIS

M & N Hanhart Imp



a bird as *Meleagris ocellata* exclusively exists, more may naturally be looked for; and I much regret my stay there was so limited. A remarkably pleasant cruise down the west coast of Central America in the 'Guatemala' also bore fruits, as Capt. Dow and I took every opportunity to go ashore with our guns; and Realejo and Punta Arenas have added two species to our present list. The rest are from the high lands, districts I had left unexplored in my previous journeys. I must thank Dr. Sclater for his kind assistance in determining the species.

1. *THRYOTHORUS PETENICUS*, sp. n.

Subtus brunneus, uropygio rubidiore; superciliis et loris albis, regione postoculari brunnea; lateribus capitis et colli albis nigro minute striatis; alis fusco-brunneis vix nigro transvittatis; cauda nigra, duabus externis rectricibus albo irregulariter punctatis, duabus mediis fusco-brunneis, his cum rectricibus reliquis nigro fasciatis; gula, pectore et ventre medio albis, lateribus corporis brunneis; crisso albo fasciis nigris transvittato. Rostro superiore corneo, inferiore albidiore; pedibus fuscis.

Long. tot. 5.1, alæ 2.3, caudæ 2; rost. a rictu 0.9 poll. Angl.

Hab. Peten.

Similis *T. modesto* ex Guatemala et Costa Rica, sed rostro longiore fasciisque caudæ et crissi differt.

This species, though like, is apparently quite distinct from *T. modestus*, its nearest ally, the more strongly impressed markings of the ear-coverts, the less rufous colour of the under parts, and the well-defined bars of the crissum pointing to its distinction. I am well aware that this latter feature would not alone justify specific separation, some species of the genus *Troglodytes* presenting great variety in this respect; but considered in conjunction with other characters, it must not be altogether rejected.

2. *DENDRÆCA NIVEIVENTRIS*, sp. n. (Pl. XXIV. fig. 2.)

D. chrysoparia, Scl. P. Z. S. 1862, p. 19, & Cat. p. 354.

♂. *Fronte, regione oculari et capitis lateribus flavis; pileo nigro vittato; nucha pure nigra; dorso nigro griseo mixto, uropygio fere omnino griseo; primariis et secundariis obscure fuscis, in pogonio externo griseo marginatis; tectricibus alarum minoribus nigris, mediis albo terminatis, majoribus nigris, in pogonio externo griseis, macula alba terminatis; rectricibus nigris, tribus utrinque lateralibus macula longa in pogonio interno alba; duabus externis in pogonio externo albis, deinde nigris usque ad terminum, rectricibus interioribus griseo marginatis; subtus gula et pectore superiore pure nigris, deinde omnino albis, lateribus vix nigro striatis; tectricibus subalaribus albis; rostro nigro; pedibus fuscis.*

♀ *similis mari, gula nigra absente.*

Long. tot. 4.85, alæ 2.7, caudæ 2.25.

A speciebus similibus *D. townsendi*, *D. virente* et *D. chrysoparia* corpore inferiore immaculato facile dignoscenda.

We obtained at different times three specimens of this species, the first from the upper parts of the Volcan de Fuego, the second from a pine-forest near S. Gerónimo, and the third near the silver-mines of Alotepeque on the Honduras frontier. The species also ranges into Mexico, it being this bird, not the true *D. chrysoparia*, which Dr. Sclater obtained from M. Boucard's collection.

3. CARDELLINA VERSICOLOR, sp. n. (Pl. XXIV. fig. 1.)

Rubra, dorso obscuriore, abdomine et uropygio clariore; capite toto cum collo et pectore argentescenti-rubris; alis et cauda fusco-nigris, illarum secundariis internis et tectricibus majoribus in pogonio externo rubro marginatis; tectricibus minoribus macula rubra terminatis; tectricibus subalaribus et margine interno primariorum albis; rostro nigro; pedibus fuscis.

Long. tot. 4·5, alæ 2·5, caudæ 2·25.

Hab. Guatemala, in regione alta (8000 ped.).

Found frequenting the edges of the forest, at an elevation of 8000 ft. and upwards; Volcan de Fuego, amongst alders; Totonicapam, Chilasco.

4. VIREO PALLENS, sp. n.

Supra obscure olivaceus, capitis lateribus concoloribus, regione præoculari pallide flava; subtus albus vix flavo tinctus; alis caudaque fuscis externe olivaceo marginatis, secundariis internis in margine albidioribus; tectricibus alarum macula albida terminatis; rostro superiore brunneo, inferiore albido; pedibus fuscis.

Long. tot. 4·6, alæ 2·3, caudæ 2, remigis spurii ·93.

Hab. Realejo in Nicaragua et Puuta Arenas in Costa Rica.

Shot by Capt. J. M. Dow and myself amongst the mangrove-bushes at the back of the above towns.

5. VIREO OCHRACEUS, sp. n.

Similis præcedenti, sed colore flavo-ochraceo, non albo, vix flavo subtus lavato distinguendus; supra etiam clarius olivaceus.

Long. tot. 4·5, alæ 2·2, caudæ 1·9, remigis spurii ·85.

Hab. San José de Guatemala.

6. VIREO SEMIFLAVUS, sp. n.

Similis præcedentibus, sed flavo corporis inferioris differt; remige etiam spurio brevior.

Long. tot. 4·35, alæ 2·1, caudæ 1·9, remigis spurii ·65.

Hab. Peten, in regione campestri.

Hi Vireones *Vireoni noveboracensi* similes sunt, sed corporibus inferioribus concoloribus facile dignoscendi.

There certainly appear to be three distinct species of *Vireo* here. Their differences may be thus shortly compared:—

<i>V. pallens.</i>	<i>V. ochraceus.</i>	<i>V. semiflavus.</i>	<i>V. noveboracensis.</i>
Longest spurious primary, pale under surface.	Moderate spurious primary, rounded; yellow-ochre colouring below; smaller than <i>V. pallens.</i>	Shortest spurious primary, yellow beneath; smaller than either <i>V. pallens</i> or <i>V. ochraceus.</i>	Short spurious primary; white throat and abdomen; yellow flanks.

7. PETROCHELIDON LITTOREA, sp. n.

Supra æneo-viridis; subtus gula alba, corpore toto cum crisso et uropygio albis, lineis angustis nigris striatis; macula alba supra regionem præocularem; remigibus et rectricibus viridescenti-nigris, interne fuscis; secundariis in pogonio externo albo anguste marginatis; rostro et pedibus nigerrimis.

Long. tot. 4·5, alæ 3·75, caudæ 1·8.

Similis *P. albiventri* ex America meridionali, sed colore æneo-viridi non cæruleo facile dignoscenda.

Hab. Amer. cent., regione littorali.

This Swallow frequents all the low rivers and sea-coasts of both oceans, from Belize to Colon on the Atlantic, and from Soconusco to Panamá on the Pacific; and it seems strange that it has hitherto escaped observation, so common is it everywhere on the coast. It breeds in old Woodpeckers' holes in the snags in the rivers.

8. SPIZELLA PINETORUM, sp. n.

Similis S. pusillæ ex Amer. sept. et Mexico, sed coloribus clarioribus et rostro robustiore differt.

Inhabits the pine-ridges and savannas of Peten, living amongst the taller patches of grass.

9. AMMODROMUS PETENICUS, sp. n.

Supra niger fusco-brunneo mixtus; alis caudaque brunneis, loris griseo-albidis, stria postoculari brunnea; gula et abdomine albidis, illa stria utrinque laterali nigra, pectore et lateribus cum crisso pallide brunneis, campterio pallide flavo; rostro corneo, mandibula inferiore albidiore; pedibus pallide flavis.

Long. tot. 5, alæ 2·25, caudæ 3·15.

Hab. Peten, in regione campestri.

Similis *A. manimbæ* ex Brasilia, sed loris albidis et gulæ striis dignoscendus.

10. JUNCO ALTICOLA, sp. n.

Cinereus, regione oculari, pileo et nucha obscurioribus; ventre medio fere albo; lateribus, crisso et uropygio brunnescentioribus; primariis fusco-nigris, pogonio externo medialiter cinereo marginato; secundariis internis fusco-nigris, pogonio externo et regione interscapulari brunneis, hac paulo obscuriore; rectricibus fusco-nigris, duabus externis macula alba interne terminatis; rostro nigro, mandibula inferiore albedo terminata; pedibus fuscis.

Long. tot. 6·25, alæ 3·1, caudæ ·3.

Hab. Guatemala, in regione alta (8000 ped.).

Similis *J. cinereo* ex Mexico, sed coloribus obscurioribus rostroque robustiore facile dignoscendus.

Evidently the Guatemalan representative of the Mexican *J. cinereus*.

11. CHRYSOMITRIS ATRICEPS, sp. n.

Olivacea; capitis lateribus griseis; abdomine medialiter cinereo; dorso postico et uropygio viridescenti-flavis; pileo toto et gula nigris, hac obscuriore; remige externo omnino nigro, secundi et tertii pogoniis externis medialiter flavo marginatis, quarti et reliquorum pogoniis externis in parte basali flavis, in parte terminali nigris flavo marginatis, pogoniis internis omnium flavo marginatis; secundariorum parte basali flava, parte terminali nigra, macula olivacea externe terminata; duabus rectricibus internis nigro-fuscis, reliquis flavis nigro terminatis; rostro superiore fusco, inferiore pallidiore; pedibus fuscis.

Long. tot. 4·85, alæ 2·9, caudæ 2.

Hab. Quezaltenango, alt. 8000 ft.

The two specimens from which the above description is taken differ considerably in coloration from one another, one being in old and somewhat worn plumage, the other more freshly moulted and brighter olivaceous. They are both males; and the former, from the greater amount of yellow in the spots on the wings, I consider as the older bird. This variation in the extent of yellow on the wings and tail is seen in the allied species *C. notata*, the female having less than the male. At first sight the present species might be taken for the young of *C. notata* (in which the sexes are almost alike); but the longer wings and more deeply forked tail point to its distinctness.

The two specimens were shot by Mr. R. Owen and myself amongst a patch of thistles near Quezaltenango, in August last (1862).

12. ELAÏNEA ARENARUM, sp. n.

Fusco-olivacea; pileo, alis caudaque obscurioribus; gula et pectore griseis, illa paulo dilutiore; abdomine toto, crisso et tectricibus subalaribus flavis; secundariis internis fusco-albo externe marginatis; tectricibus alarum macula fusco-alba terminatis; rostro et pedibus nigerrimis.

Long. tota 5·6, alæ 2·8, caudæ 2·7.

Hab. Costa Rica.

Shot by Capt. J. M. Dow and myself near Punta Arenas.

13. PANYPTILA SANCTI-HIERONYMI, sp. n. (Pl. XXIII.)

Purpureo-nigra; gula, pectore et torque postico pure albis, macula alba utrinque uropygii et frontis laterulibus; primariis tribus externis omnino nigris, reliquis in pogonio interno albo marginatis, secundariis albo terminatis, deinde fusco subterminatis; rostro nigro; pedibus vestitis.

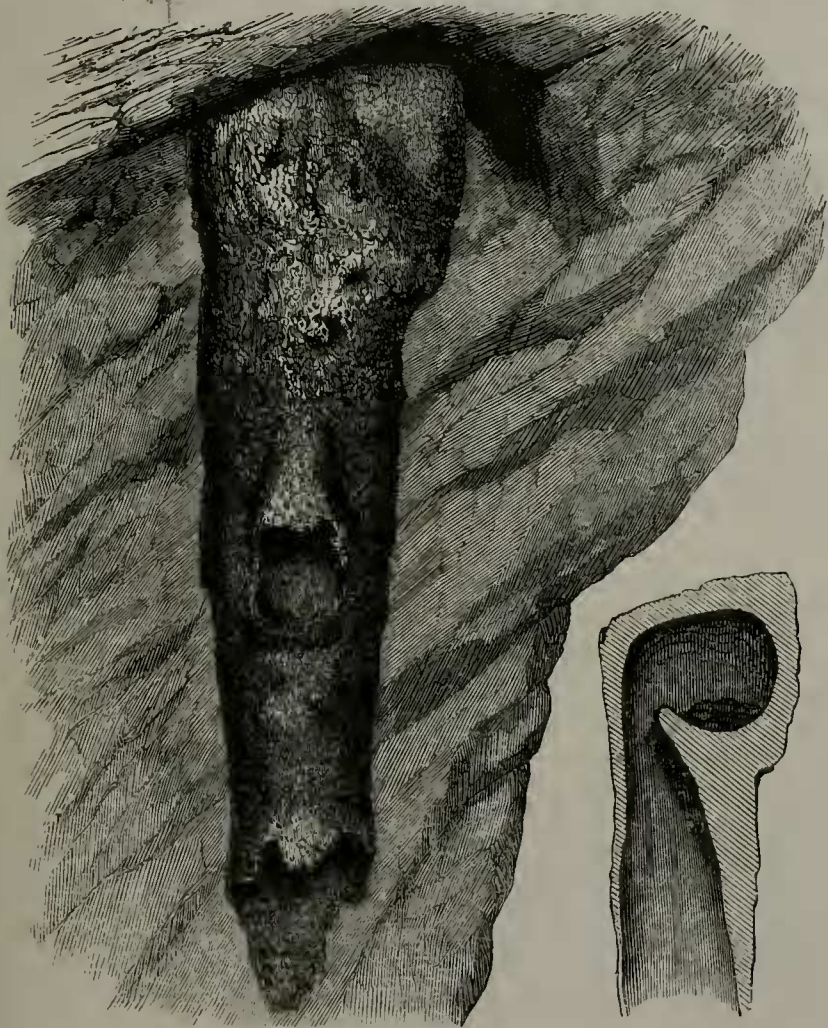
Long. tot. 7·5, alæ 7·5, caudæ 3·6.

Similis *P. cayennensi*, sed major.

Hab. San Geronimo in reipub. Guatemalæ.

Nest.—The nest of this species is composed entirely of the seeds of a plant, secured together and hung from the under surface of an overhanging rock by the saliva of the bird. The whole structure measures 2 feet 2 inches in length, and is about 6 inches in diameter. The entrance is at the end, and the hollow for the eggs at the top.

The first time we met with this beautiful Swift was near San Gerónimo in Vera Paz, soon after our arrival in Guatemala in 1861. I then recognized it as distinct from *P. melanoleuca*, but afterwards, not having secured specimens, imagined we must have mistaken it for that bird. In July of last year (1862) I had the satisfaction of



having brought to me alive, by Mr. Carter of San Gerónimo, two birds which clearly showed that our first impression was correct.

They had been caught by an Indian under a rock near the village

of Matanzas, in the mountains. The birds, though apparently uninjured, were quite sleepy, not attempting to fly; the only energy they exhibited was by making their powerful claws meet in my fingers when I endeavoured to secure them. I afterwards, on several occasions, observed them flying over the plain with amazing swiftness during dull rainy evenings of July. Later on in the autumn Mr. Hague, of San Gerónimo, secured for me the nest which I now exhibit. He found it, during a visit to some Indian ruins in the neighbourhood, sticking to the under surface of an overhanging rock.

The bird was distinctly seen to enter several times; but Mr. Hague was unable to shoot it, owing to its rapid flight. There were no eggs in the nest. In this nest we see the saliva of the bird used as an adhesive material in nest-building, as in the genus *Collocalia* of the Old World, but differently applied. At first sight the saliva appears to have been used merely to secure the foundation of the nest (if the term may be applied inversely) to the overhanging projection of rock upon which the rest of the structure is woven, as in the nests of the Icteridæ; but upon closer examination it will be seen that the saliva has been applied to secure every one of the seeds used in the construction of the nest, and in no other way could so firm and durable a structure be attained. Another curious feature will be noticed in this nest,—which is, the false entrance at the side. I remember to have seen a similar thing in other nests; I think they were Australian. They appear to be placed there to deceive some enemy, such as a snake or lizard, to the attacks of which the parent bird or its offspring would, during the time of incubation, be more exposed. It would be interesting to know how the materials for this nest were gathered, whether from the plant itself, or caught in the air by the bird as the seeds were carried by the wind. <

3. ON THE SPECIES OF THE GENUS STERNOTHERUS, WITH SOME OBSERVATIONS ON KINIXYS. BY DR. J. E. GRAY, F.R.S., ETC.

The shell or thorax of the *Sternotheri* offer such different appearances, according to the age or other special conditions under which they have lived, that it is almost impossible to distinguish them; and the more specimens are received, the greater becomes the difficulty. Under these circumstances, as the heads seem to present some characters which, as far as I have been able to observe them in the limited number of specimens which come under my examination, seem permanent, I have attempted to define the peculiarities presented by the heads of the specimens in the Museum Collection from different localities. The species were so difficult to distinguish by means of the shell only, that, in my 'Catalogue of Shield Reptiles in the British Museum,' I stated that all the species there noticed "perhaps may prove only to be varieties of the same species, or dependent on age" (p. 52).

A larger series of specimens from the same locality has shown that such characters as the shape and thickness of the shields, and

especially of the first vertebral shield, which have been hitherto to some extent depended on for the separation of the species, are very variable. Therefore the discovery of some other more permanent characters seems important; and the form and disposition of the shields on the head appear to furnish such characters.

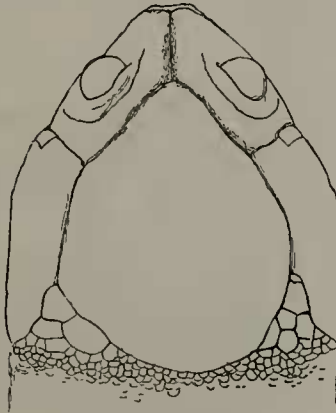
Mr. Cope observes that *S. derbianus* differs from *S. sinuatus* of Smith "mainly in the form of the upper mandible, which is obtusely hooked in the former, bidentate in the latter." I suspect he must have been misled in these observations by figures or descriptions; for the jaws of the typical specimens of the two species are very similar.

It will be necessary to separate the genus into three sections, according to the form of the head, premising that I only know the species belonging to the third section from the descriptions of MM. Duméril and Bibron, as all the specimens that have come under my observation belong to the first or second sections. These sections may be thus characterized:—

I. *Head short and broad; the upper jaw obscurely notched and bidentate in front; the crown shielded to a line even with the back of the tympanum.* Tanoa.

1. STERNOTHÆRUS SINUATUS, A. Smith, S. African Zool. t.

Head rather broad, depressed; jaws pale; the temporal plate



Head of *S. sinuatus*.

broad and short, only reaching to the front of the tympanum, and with another rather smaller similar plate behind it over the ear; the hinder vertebral plate of the adult as wide as long, not tubercular; the fore legs with small scales, and with some very wide, slender, band-like shields on the inner side of the upper surface; the sternum with a narrow deep notch behind.

Sternothærus castaneus, part.; Gray, Cat. Shield Rept. B.M. p. 52.

Hab. S. Africa: Natal (*Dr. Krauss*).

In other specimens the front marginal shields are rather wide, the middle one as long as broad; the front vertebral shield is elongate, with straight sides.

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I think it better to retain the name given by Dr. Andrew Smith to the Natal specimen for this species; for it is very doubtful to which of the specimens the *Emys castanea* of Schweigger is referable, and one of the specimens I described as *S. castaneus* is certainly *S. derbianus*.

2. STERNOTHÆRUS DERBIANUS.

Pentonyx gaboonensis, A. Duméril, Arch. du Mus. x. p. 164, t. 23. f. 2 (young).

The head very broad, depressed; jaw dark, black-lined; the temporal plate single, broad and long, reaching to the back of the tympanum; the upper surface of the front leg with moderate-sized scales, and with many larger, convex band scales on the inner side; the hinder edge of the fourth and the upper edge of the fifth vertebral plate tubercular; the sternum with a deep rounded notch behind; the vertebral plate of the adult longer than broad.

Hab. W. Africa: Gaboon; Sierra Leone.

Our specimens offer several varieties, thus:—

1. Front marginal plates thick, convex, broader than long; the front vertebral shield elongate urn-shaped.
2. Front marginal plates as long as broad, flat; the front vertebral shield elongate urn-shaped.
3. Front marginal plates as long as broad, flat; the front vertebral shields elongate, with straight sides.

In one specimen of the first variety the vertebral shields are much narrower than in the other.

The shield on the crown of the head in the two specimens which have heads is more or less perfectly divided into three shields, viz. one frontal and two occipital, but together they cover the whole top of the head to a line with the back of the ears, and there are only a few small shields between the hinder side of the hinder part of it and the back edge of the temporal shields.

I think there can be very little doubt that the specimen which M. Aubrey Lecomte sent to the Paris Museum from the Gaboon, and which M. Auguste Duméril, in his very hasty and very incomplete and inaccurate paper "On the Reptiles of Western Africa," in the 'Archives du Muséum' (vol. x. p. 165), has described and figured under the name of *Pentonyx gaboonensis*, is only the young state of this species. One is surprised that a herpetologist who must have unrivalled opportunities of study should not have been led by the breadth of the lobes of the sternum to have doubted its being a *Pentonyx*. However, it is well, as it gives their museum a representative of a species which they did not formerly possess. But, what is more extraordinary still, M. A. Duméril, who is so ready with and so bitter in his observations on the works of others, though this figure shows that the horny plates consist almost entirely of the areolæ of the large shields, with only two or three rings of deposit round them, showing that the animal could not long have been hatched, yet observes, "L'aspect de la carapace et sa solidité comparée à celle de la boîte osseuse de jeunes *Pentonyx* du Cap semblent prouver que

notre individu est adulte" (p. 164). The example figured must be that on which this observation is founded; for he observes, "Il est unique dans la collection."

It is probable that *Emys adansonii* of Schweigger, the *Pentonyx*, and more lately the *Sternothærus adansonii* of Duméril and Bibron, described from a shell in the Paris Museum said to come from the Cape de Verd, is probably only a half-grown specimen of this species, which is the only *Sternothærus* I have seen from Western Africa.

The specimen in the British Museum from Sierra Leone, which is described in the 'Catalogue of Shield Reptiles' (p. 52) as *Sternothærus castaneus*, appears to belong to this species.

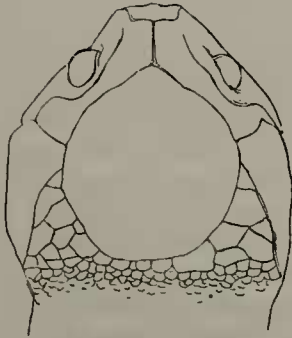
II. *The head rather short and broad; the upper jaw truncated; the crown covered with an oblong shield (or three smaller shields), with a number of smaller shields over the tympanum, between the hinder outer edge of the crown-plate and the upper edge of the large temporal shields. Notoa.*

STERNOTHÆRUS SUBNIGER.

S. castaneus, Dum. et Bibr. Erp. Gén. ii. p. 401, t. 20. f. 1.

Head depressed; jaws pale; the upper surface of the fore legs with small scales, and a few rather larger ones on the inner sides.

Hab. Madagascar.



Head of *S. subniger*.

The specimen in the British Museum, which was received from Paris under the above name, and as coming from Madagascar, agrees well with Duméril and Bibron's description and figure; but they do not describe the small shields on the head, and especially say that the frontal plate is much developed, and that there are no occipital plates. Now, in our specimen the sutures of the occipital plates are well seen, and they are peculiar for being oblong and obliquely placed (so as to leave the sides of the occiput to be covered with small shields), instead of being large and trigonal (as they are in the two other species) and covering all the space on the head to the margin of the temporal shields.

III. "Head elongate; upper jaw with a recurved crown, with a moderate beak, frontal, two long nasal, and two large parietal plates." Anota.

STERNOTHERUS NIGER, Dum. et Bibr. Erp. Gén. ii. p. 597 (not t. 20. f. 1, as quoted).

Hab. Madagascar.

We have recently received from Western Africa several specimens of the genus *Kinixys*, and they all tend to prove the distinctness of the three species in the 'Catalogue of Shield Reptiles in the British Museum,' viz. 1. *K. belliana*; 2. *K. erosa*; and 3. *K. homeana*. *K. belliana* is easily separated from *K. erosa* (as well as by other characters) by the small size of the gular plates. It would appear that this species is common both to West and Eastern Africa, as Mr. Whitfield brought it from the Gambia, Dr. Peters found it in Mozambique, and Dr. Rüppell at Shoa: so also is *K. homeana*; for Lieut. Friend found it at Cape Coast in West Africa, and Mr. Berthold on the east coast of Africa.

The *K. erosa* seems to be common in several parts of West Africa. It is abundant at Gaboon, and seemingly not uncommon at the Gambia. It is a very variable species, but always to be distinguished by the reflexed and strongly dentated posterior margin, and the large size of the gular plates. It varies in form. Some specimens are oblong-elongate, narrow, as wide before as behind (that is to say, straight on the sides): these, as the older specimens have the sternum concave, which we generally consider the peculiarity of the male sex, are probably male. Others are ovate, much broader compared with their length, and broader behind than before, and the sides of the back are more convex: these are probably the shells of females. The specimens of both these shapes are varied with yellow on the upper side of the costal plates, and have short irregular yellow rays at the outer angle of the costal and vertebral shields; but the distinctness of these coloured rays varies in the different specimens. The form of the gular plates also varies; they are always rather large, and the front outer angles are rather produced forward, leaving a deep angular notch; but in one specimen, which has a concave sternum, and is probably an old male, they are very much enlarged, and produced beyond the upper edge of the thorax. They are longer than broad, and truncated in front, so as to present a straight margin without any notch, they are as long as the humeral plate at the inner side, and the front margin of them is as broad as the length of the outer side, which is concavely curved out. There seems, from M. Auguste Duméril's figure, to be only a thorax, without any sternum, of this species in the Paris Museum.

The most natural division of this genus is the following:—

A. The front lobe of the sternum narrowed and tapering in front, with a small truncated pair of gular shields; the sides of the margin even; nuchal shield distinct. *Kinothorax*.

1. KINIXYS BELLIANA.

B. The front lobe of the sternum broad ; side curved outwards, with a large pair of gular shields produced at the outer angles ; the sides and the margin strongly dentated. *Kinixys*.

1. *KINIXYS EROSA*. The fifth vertebral plate rounded ; nuchal bone.

2. *KINIXYS HOMEANA*. The fifth vertebral plate produced, angular ; nuchal plate distinct.

4. ON THE ARRANGEMENT OF THE CETACEANS. BY DR. JOHN EDWARD GRAY, F.R.S., ETC.

In the part of the 'Zoology of the Erebus and Terror' devoted to the Cetacea I collected together all the materials within my reach, and published an arrangement of the genera, and notes on all the species, of these animals which were then known to me, either from the examination of the specimens in different museums, or from the descriptions and observations in various zoological and whaling works. The first part of the 'Catalogue of the Specimens of Mammalia in the Collection of the British Museum,' which is devoted to the Cetacea (published in 1850), may be considered as a revision of the former essay, with the additional material that I had been able to collect since it had been penned. During the thirteen years that have elapsed since the publication of the Catalogue I have not allowed any opportunity to escape of examining and comparing the different specimens which have come under my observation, and I have read with care all the papers and works that I have been able to meet with bearing in any way on Whales and their allies. I am now induced to lay the results, as far as the general arrangement of the order is concerned, before the Society.

Some zoologists pay little regard to such re-arrangements of genera and the division of them into groups ; but this arises from the points of view from which they regard them. If they look on them as only artificial keys to discover the name of a genus, and thus arrive at the name of a species, and if that is the object of the person who forms them, then they are perhaps estimated at their right value. But I have laboured at these and other arrangements which I have suggested with a very different view. If it is considered desirable to place the species in natural groups called genera, it is certainly equally desirable that the genera so formed should be disposed in the larger and larger groups in such an order as appears to the writer most distinctly to exhibit the natural relations which the genera bear to each other. If they are so disposed, then the name that is given to a group of species is of little importance, as to whether the group is called a genus or subgenus, a genus or subfamily, or a family. They may be so regarded at the caprice or theory of the student, as, whatever may be their nominal value, they are intended to represent a natural group of species, arranged together so as best to represent, according to the writer's view, the natural relation of the species to each other.

If the arrangement of the species into genera requires mature deliberation and the study of the value of the different characters observed as to their permanence and variability in each group (and the variations in different organs are often of very different value in this respect in very nearly allied groups), then the arrangement of the minor groups into larger and larger ones, according to my experience, and indeed as any one may *à priori* suppose, demands a greater power of comparison and reasoning, since there are a greater number of facts, of characters, and of resemblances or differences, and of variation or permanence, to be considered and reasoned on—that is to say, if the constituents of the larger groups are conscientiously examined and determined on, as they must be to render them of value for the purposes above stated.

I am aware that this is not the feeling of many zoologists, but I believe this arises from most zoologists restraining themselves to the study of a limited number of species or genera. This is proved by the fact that many zoologists pay great attention as to who was the first person who gave the name to a genus, though the genus may have been restricted, or even extended, and its characters completely altered since the name was first applied, but pay little or no attention to the first person who formed a group, or to the synonymy or history of the changes which have taken place in the characters or arrangement of the group or genera themselves. This is not the case with botanists, who are generally much better grounded in the philosophy of science. They are careful in giving the synonyms of the families and subfamilies, as may be seen in works of DeCandolle and others: And it is very desirable that the same attention should be paid to the subject in zoological essays.

The order Cetacea must be divided into two suborders, viz. CETÆ and SIRENIA. I have nothing to add to the arrangement of the second suborder.

Suborder I. CETÆ.

Skin smooth, bald. Teats two, inguinal. Limbs clawless; the fore limbs fin-shaped; hinder united, forming a forked horizontal tail. Nostrils enlarged into blowers. *Carnivorous.*

- I. *The nostrils longitudinal, parallel or diverging, covered with a valve, one often larger and more developed.*

Fam. 1. BALÆNIDÆ.

Head very large, depressed. Nostrils separate, nuchal. Teeth not developed in the adult. Palate furnished with transverse horny fringed plates of *baleen* or *whalebone*.

- a. *Dorsal fin none; belly smooth; baleen elongate, slender; vertebræ of neck united; pectoral broad, truncate at end.*

- I. BALÆNA. Pectoral fin moderate. Head one-third of the entire length.

- b. *Dorsal fin distinct; belly plaited; baleen short and broad; vertebræ of neck more or less free; pectoral lanceolate.*
2. MEGAPTERA. Pectoral fin elongate. Dorsal fin low, truncate.
 3. BALENOPTERA. Pectoral fin moderate. Dorsal fin falcate, two-thirds the entire length from nose. Vertebræ 46 or 48.
 4. PHYSALUS. Pectoral fin moderate. Dorsal fin falcate, three-fourths the entire length from nose. Vertebræ 54-64.

Fam. 2. CATODONTIDÆ.

Head large, subcylindrical, blunt. Lower jaw narrow. Teeth large, in the lower jaw only, fitting into pits in the gums of the upper one. Nostrils separate, one often abortive. The hinder edge of the maxillary elevated, forming a concavity on the forehead of the skull. Pectoral broad, truncated.

* *Head subcylindrical, truncated; nostril in front of the truncated head; dorsal hump rounded.*

1. CATODON. Head very large, one-third of the entire length of the animal.

** *Head depressed, rounded in front; nostrils in the forehead; dorsal fin falcate.*

2. PHYSETER. Head very large, one-third of the entire length of the animal, rounded, convex above. Teeth conical, compressed. Skull elongate?
3. KOGIA = *Euphyseter*, Wall. Head short, very broad. Forehead convex. Teeth conical, cylindrical. Skull very short and broad.

Fam. 3. PLATANISTIDÆ.

Head small, long-beaked, beak compressed. Teeth in both jaws, at first cylindrical, becoming compressed. Blowers linear, parallel, over the eyes. The sides of the maxilla elevated, forming a vaulted cavity over the forehead. Pectoral broad, truncated.

1. PLATANISTA.

II. *Nostrils united into a single transverse or crescent-shaped blower. Head moderate, more or less beaked. Teeth in both jaws, often deciduous. The pectoral fin lanceolate, tapering.*

Fam. 4. INIADÆ.

The head beaked, beak hairy. Teeth rugulose, crown with an internal process. Back without any fin, keeled behind. Pectoral fin large.

1. INIA.

Fam. 5. DELPHINIDÆ.

Head more or less beaked, smooth. Teeth simple, cylindrical, conical, smooth. Back rounded. Dorsal fin distinct, falcate, rarely wanting.

- A. *Head more or less beaked; beak of the skull as long, or longer, than the brain-cavity.* Bottlenoses.
- a. *Pectoral fins moderate, lanceolate, far apart on the sides of the chest; teeth in both the jaws permanent.* Delphinina.
1. PONTOPORIA. Beak of skull rather compressed, high. Symphysis of the lower jaw very long. Dorsal medial.
 2. STENO. Beak of the skull rather compressed, higher than broad. Symphysis of the lower jaw rather elongate. Dorsal medial.
 3. DELPHINUS. Beak of the skull rather depressed, convex above. Dorsal medial.
 4. DELPHINAPTERUS. Beak of the skull rather depressed, convex above. Dorsal none.
 5. LAGENORHYNCHUS. Beak of the skull depressed, expanded. Head shelving in front. Dorsal rather posterior.
- b. *Pectoral fins small, low down, and rather close together on the middle of the chest; upper jaw toothless; lower jaw with few teeth, sometimes deciduous.*
- * *Maxillary bones elevated into a crest on the sides behind; teeth two or four, anterior conical.* Hyperodontina.
6. HYPERODON. The crest of the maxillary bone thin and wide apart above. The beak of the skull descending downwards. The hinder edge of the skull as high as the crest. Lower jaw rather curved. *Hyperodon rostratum.*
 7. LAGENOCETUS. The crest of the maxillary bones very thick and close together, especially above, where they are flat-topped. The beak of the skull horizontal. The hinder edge of the skull lower than the top of the crest. Lower jaw straight. *Lagenocetus latifrons.*
- ** *Maxillary bones simple; teeth, on the sides of the lower jaw, compressed.* Ziphiina.
8. BERARDUS. Lower jaw gradually tapering in front. Teeth, two, in the front of the jaw large conical.
 9. ZIPHIOUS. Lower jaw gradually tapering. Teeth on the sides of the jaw large, compressed.
 10. DELPHINORHYNCHUS. Lower jaw gradually tapering. Teeth on the sides of the jaw small, conical. (Perhaps the female of the former.)
 11. DIOPLODON. Lower jaw broad behind, suddenly tapering in front. Teeth on the sides of the jaw large, compressed. *Dioplodon densirostris.*

B. *Head rounded in front, not beaked; beak of the skull scarcely as long as the brain-cavity.*

a. *Pectoral fins falcate, elongate, low down, near together on the chest; head very swollen; intermaxillary bones very wide, covering the maxilla above; teeth conical; side of maxilla expanded horizontally.* Globiocephalina.

12. GLOBIOCEPHALUS.

b. *Pectoral fins ovate, wide apart, lateral; intermaxillary bones moderate.* Phocænina.

† *The lateral wing of the maxilla horizontally produced over the orbit; dorsal distinct; teeth conical.*

13. ORCA. Teeth large, acute, permanent. Intermaxillaries moderately wide.

14. GRAMPUS. Teeth early deciduous. Intermaxillaries broad.

†† *The lateral wings of the maxilla shelving down over the orbit.*

* *Teeth permanent, compressed, sharp-edged.*

15. PHOCÆNA. Dorsal triangular, central.

16. NEOMERIS. Dorsal fin none.

** *Teeth early deciduous, conical; dorsal none.*

17. BELUGA. Teeth in both jaws early deciduous.

18. MONOCEROS. Teeth very early deciduous. Male with a projecting spiral tusk in the upper jaw.

The greatest desideratum of zoology is the power of examining some specimens of the genus *Physeter*, or Blackfish, as it is called by the whalers. There is not a bone, nor even a fragment of a bone, nor any part of an animal that can be proved to have belonged to a specimen of this gigantic animal to be seen in any museum in Europe. This is the more remarkable as the animal grows to the length of more than fifty feet, is mentioned under the name of the Blackfish in almost all the Whaling Voyages; and two specimens of it were examined by Sibbald, having occurred on the coast of Scotland. The only account which we have of the animal on which zoologists can place any reliance is that furnished by Sibbald in his 'Little Tractate on Scotch Whales.'

Boyer, in the 'Nova Acta Naturæ Curiosorum,' describes a Whale found at Nice which has been thought to be a Blackfish, on account of the position which he assigns to the blower; but the figure which he gives is so much like a bad design of a Spermaceti Whale (*Catodon*) in other respects, that it is doubtful to which genus it properly belongs.

I am aware that in some catalogues of osteological specimens

some conical or small worn-down Whale's teeth are named as if they belonged to this genus, or to the "High-finned Cachalot," as it is called; but these teeth are not to be distinguished from the teeth of the younger true Sperm Whales. Mr. Wall, in his account of the Australian Sperm Whale, thinks the skeleton of the Whale at Burton Constable is the skeleton of a Blackfish; but Anderson, in his account of this animal, particularly says, "The nostrils were at the end of the snout," and the skeleton is that of a true *Catodon*, as is proved by careful examination.

It is to be hoped that some whaler will preserve the skull, if not some of the other bones, of the animal called the "Blackfish," which, according to the account of Sibbald, must yield a good quantity of spermaceti; for he mentions that four men were seen inside the cavity of the cranium extracting the sperm, or, as he calls it, "the brain." Yet Beale, in his 'History of the Sperm Whale,' specially says, after well describing the difference between the *Sperm Whale* and the *Blackfish*, that they do not produce spermaceti (p. 11). But I may observe that, according to Bennett and Nunn, in the Pacific the name of Blackfish is given also to the large Dolphin described by me as *Globiocephalus macrorhynchus*.

5. ON THE EYES OF EMYDIDÆ AND BATRACHIA.

BY DR. J. E. GRAY, F.R.S., ETC.

There is no character that an animal offers that is not worthy of study; and my attention has lately been called to the eyes of the freshwater Tortoises, and they have afforded me some information which I believe important. All the paludinal Terrapens which I have been able to examine have a large square dark spot on each side of the iris. This spot, with the pupil, forms a dark band across the eyes. I have observed this to be the case in the species of *Emys*, *Pseudemys*, and *Chrysemys*; and on looking at Holbrook's 'North American Herpetology,' where the animals are all figured with care from life, we find that he represents and describes all the North American species of *Emydes* as having this band across the eye. I may observe that I have also seen it in a South American Tortoise, which I have called *Geoclemmys annulata*; and I think it is also found in *Testudo scabra*, another tropical American Terrapen with separate toes. These animals have been called *Rhinoclemmys* by Fitzinger. They are probably a natural genus, characterized by this peculiarity in the eyes. All the American species of *Geoclemys*, the two species of *Cistudo* figured by Holbrook, the æstuarian Terrapen *Malaclemys*, the aquatic Box-Tortoises *Kinosternon* and *Aromochelys*, and the Lacertine Terrapens *Chelydra* and *Macrolemys*, have an annular iris without any interruption. It will be interesting to observe the eyes of the Asiatic and European species; but this can only be relied upon in living specimens, as the spot on the angle of the eye is not to be observed in the specimens preserved

in spirits, where only the circular pupil is distinctly marked even in the American *Emydes*.

P.S. When this paper was read, it was observed that the Tritons and Toad had the same peculiar spot on the sides of the iris, and that it was common to the Batrachia. This is a mistake; the European and North American species of *Bufo*, *Rana*, *Hyla*, and *Hylodes* have an oblong-transverse pupil, with an oblong ring-like iris, the upper portion of which is often differently or more brightly coloured than the lower; but this form of pupil is not universal in the tailless Batrachia; for, according to Dr. Holbrook, the genus *Scaphiopus* has a small circular pupil, and the iris divided into four equal parts by black radiating lines. According to the figures of the same author, who had all the species figured from life, the North American Salamanders and Tritons, the *Amphiuma*, *Menopoma*, *Siren*, and *Menobranchus*, all have small circular pupils, with an annular iris. The *Triton cristatus* of England, *T. marmoratus* of Spain, and *T. alpestris* of Germany, have a circular ring-like iris; and the only Batrachians which appear to have the spot on each side of the iris, forming a band across the eyes, are the English *Lophinus punctatus* and *L. palmatus*, the band on the eyes looking in these like a continuation of the dark streak on the side of the head. I may add that the best character for the distinction of these two species, which are often found in the same pond, is, that in *L. punctatus* the crest of the male is scalloped on the edge, and high in front; while in *L. palmatus* it is low in front, and higher behind, and has a smooth straight upper edge. The tail of the latter is also always truncated, and usually appendaged at the tip.

6. ON THE SPECIES OF ZOSTEROPS INHABITING CHINA AND JAPAN, WITH THE DESCRIPTION OF A NEW SPECIES. BY ROBERT SWINHOE, F.Z.S., ETC.

The genus *Zosterops* is represented in China by two species, one inhabiting South China and the island of Formosa, the other North China, from Shanghai northwards into Amoorland. The species peculiar to Japan has been described by MM. Temminck and Schlegel in the 'Fauna Japonica,' and is allied to both the Chinese species, but quite distinct from either. I proceed to characterize briefly the two Chinese species.

ZOSTEROPS SIMPLEX, Swinhoe, Ibis, 1863, p. 294.

Similis Z. palpebrosæ ex India, sed major; supra magis viridis; alis caudaque saturatioribus.

This species ranges in China from Canton to Foochow, and perhaps a little higher; but not to Shanghai, where it is replaced by the following. In Formosa it is also an abundant resident. On its nesting and habits I have already written much in the 'Ibis,' and will not therefore here repeat my remarks. It has its nearest ally in *Z. palpebrosa* of India, being, like it, light grey on the under parts. An

occasional specimen or two, however, may be picked out of my Amoy series with a tinge of chestnut-brown on the under parts, showing the tendency of the species towards the Japanese *Z. japonica*. Some have the belly deeper grey than others. The yellow on the throat and vent varies in intensity, as also does the green of the upper parts; but these are chiefly distinctions of sex and age. I have one pale, almost yellow variety, procured by Capt. Blakiston at Canton. All the adults have the black lore- and eye-line peculiar to so many of this group. I have specimens from Hong Kong, Macao, Canton, Amoy, Foochow, and Formosa; and they all agree in essential characters.

ZOSTEROPS ERYTHROPLEURA, n. sp.

Z. chloronotus, v. Schrenck (nec Gould).

Lateribus utrinque saturate castaneo-rufis.

Long. alæ $2\frac{1}{2}$ poll., caudæ 1.7.

The distribution of this species extends from Shanghai into Amoorland. I had, until lately, confounded it with the *Z. japonica* of Japan; but while on a visit to M. Jules Verreaux at Paris, I had the pleasure of examining for the first time a veritable Japanese specimen, and of comparing it with North China skins. The difference in the two birds is striking. Both have, like the preceding, black markings on the lore- and partly round the white eye-ring. The under parts of *Z. japonica* are a dull light brownish chestnut, while the flanks of this species are of a deep rusty chestnut. This bird is larger and longer-winged than our South China species, but is exceeded in both by the Japanese. I here exhibit two specimens from Shanghai, kindly lent me by M. Jules Verreaux, and one from Tientsin. The two former are much brighter on the flanks than the latter; but as they are both males, and our Tientsin bird is a female, the difference may be only a sexual one, and not one of locality. What could have induced M. v. Schrenck, in his 'Amoorland,' to confuse this species with the *Z. chloronota*, Gould, of Australia, I cannot understand. I am enabled to produce a specimen of this last from M. Verreaux's collection, the shape of the bill and head of which, as well as the dull sordid colour of the plumage, show at once a marked difference from the Chinese bird. Indeed there are many species from Asia and Africa far more closely allied to our species than is the *Z. chloronota*. For comparison with the two Chinese species, I am enabled to bring before the Society the *Z. palpebrosa*, Gray, of India, the *Z. japonica*, T. & S., and two Australian species, *Z. chloronota*, Gould, and *Z. cærulescens*, Blyth. I think all practical ornithologists will agree with me in considering the three forms of Eastern Asia as distinct *inter se*, and from all others of this numerously represented group. As I have never met the North China species alive, except as a cage-bird, I have nothing special to relate regarding its habits.

7. ON A NEW SPINE-TAILED SWIFT FROM WESTERN AFRICA.
 BY P. L. SCLATER, M.A., PH.D., F.R.S., ETC., SECRETARY
 TO THE SOCIETY.

(Plate XIV. fig. 2.)

While examining the American Swifts of the genus *Chætura* in the British Museum, Mr. G. R. Gray kindly called my attention to two African species of the same genus, which have hitherto been confounded together. These are the *Chætura sabini*, described by Dr. Gray in Griffith's edition of Cuvier's 'Animal Kingdom,' and the species called *Chætura sabini* by Mr. Cassin in his 'List of the Birds collected by M. Du Chaillu on the Rivers Camma and Ogobai.'

The latter bird is obviously distinct from the former, as will appear by the following characters, and may be called *Chætura cassini*:—

(1.) CHÆTURA SABINI.

Chætura sabini, Gray, Griff. An. K. ii. p. 70; Hartl. Orn. W. Afr. p. 25.

Chætura bicolor, Gray, Zool. Misc. p. 7.

Pallene leucopygia, Boie, Isis, 1844, p. 168.

Acanthylis bicolor, Strickl. P. Z. S. 1844, p. 99.

Nigra: uropygio, caudæ tectricibus superioribus et inferioribus et ventre cum crisso albis: tectricum caudalium sup. et inf. plumarum rachidibus nigris.

Long. tota 4·0, alæ 5·0, caudæ 1·5 poll. et dec. Angl.

Hab. Sierra Leone (*Sabine*); Fernando Po (*Fraser*).

In this smaller species the tail is wholly black; and the whole of the upper and under tail-coverts are pure white, with black shafts to the feathers.

(2.) CHÆTURA CASSINI, sp. nov. (Pl. XIV. fig. 2.)

"*Chætura sabinei*," Cassin, Proc. Acad. Sc. Phil. 1859, p. 33.

Nigra: uropygii fascia angusta et corpore subtus albis; pectore fuliginoso: pectoris et gulæ plumarum rachidibus nigris.

Long. tota 4·8, alæ 6·3, caudæ 1·2.

Hab. Gaboon (*Du Chaillu*).

In this species the upper tail-coverts are black, crossed by a narrow white bar, which extends through and is partially observable on the rectrices. The size is much larger than in *Chætura sabini*, the bird being represented in the accompanying plate two-thirds of its natural dimensions.

8. OBSERVATIONS ON THE BIRDS OF SOUTH-EASTERN BORNEO,
 BY THE LATE JAMES MOTTLEY, ESQ., OF BANJERMASSING;
 WITH NOTES BY P. L. SCLATER, M.A., PH.D., F.R.S.,
 SECRETARY TO THE SOCIETY.

My friend Mr. L. L. Dillwyn having placed in my hands some MS. notes written by the late Mr. James Mottley of Banjermassing (who was killed in the Malay insurrection at that place in 1860), together with the series of bird-skins to which the notes refer, I have, with the kind assistance of Messrs. A. R. Wallace, J. H. Gurney, and A. Newton, determined the species, and added some few remarks on their synonymy and geographical distribution.

Mr. Mottley's collection contains specimens of 134 species of Bornean birds. As no connected list has ever been published of the birds of Borneo, the present may be useful to a certain extent as a contribution to geographical ornithology, although the series is in many points obviously very imperfect.

It may be observed that the greater number of the birds of Borneo, as shown by the present collection, are common to Sumatra and Malacca. In some instances the Malaccan and Sumatran species are replaced by representatives sufficiently different to render specific separation possible. For example, we have in

Borneo.	}	representing the following species in	Sumatra and Malacca.
<i>Megalæma chrysopsis</i> ,			<i>Megalæma chrysopogon</i> .
<i>Megalorhynchus sanguinolentus</i> ,			<i>Megalorhynchus hayi</i> .
<i>Meiglyptes badius</i> ,			<i>Meiglyptes badius</i> .
<i>Mixornis borneensis</i> ,			<i>Mixornis sumatrana</i> .
<i>Copsychus suavis</i> ,			<i>Copsychus macrurus</i> .
<i>Edolius brachypterus</i> ,			<i>Edolius paradiseus</i> .
<i>Crypsirrhina aterrima</i> ,	<i>Crypsirrhina leucoptera</i> .		

But there are a few species (such as *Munia fuscans*) which, so far as we know at present, are unrepresented in the latter countries.

The generic types peculiar to Borneo are very few in number. *Galgulus* sive *Pityriasis gymnocephalus* is perhaps the only very noticeable type peculiar to the island; but as the interior mountains of Borneo are wholly unexplored, it is not improbable that future explorers may yet find much that is interesting in the untraversed central regions.

Fam. FALCONIDÆ.

1. FALCO PEREGRINUS, Linn. (*Rajah wali*.)

An exceedingly courageous bird. No prey is too large for him to attack: he is even said to kill young deer. Rare.

2. HIERAX CÆRULESCENS (Linn.). (*Alang lulalang*—Grasshopper Hawk.)

Not uncommon here, perpetually on the wing, and living on large insects and small birds. I have never seen so courageous a bird.

The largest birds (even those twenty times as large as itself) are attacked by it without hesitation, and generally beaten off by the activity and perseverance of their small enemy. The natives frequently discover the nest of this Hawk by the parent birds swooping at the heads of those who approach the tree where it is.

3. HALIASTUR INDUS (Bodd.). (*Alang sapa.*)

A very common but exceedingly wary bird, always to be seen sailing about. It feeds on snakes, lizards, and offal, and appears to be common all over the East.

4. PONTAËTUS ICHTHYAËTUS (Horsf.). (*Taryanng.*)

Shot by my hunter.

5. SPILORNIS BIDO (Horsf.). (*Rajah wali-laut.*)

Rare, and seen only on the coast. It feeds on fish.

6. ACCIPITER VIRGATUS (Temm.), Pl. Col. 109.

This small Hawk was much damaged, having been kept long alive with a broken foot. It was bought from a native.

7. ACCIPITER SOLOËNSIS (Horsf.).

Received from the Dyak River.

8. ELANUS HYPOLEUCUS, Gould, P. Z. S. 1859, p. 127; B. Asia, pt. 12. (*Rajah wali.*)

Shot at Pulo-sari. I saw this bird for several days, while we were there, regularly beating the padang; but one day I got near him as he sat, gorged, on a dead tree.

Fam. STRIGIDÆ.

9. KETUPA JAVANICA (Horsf.). (*Katatupi.*)

Common, though rarely seen: its note is a melancholy sound, often repeated, between a trip and a shrill whistle.

10. PHODILUS BADIUS (Horsf.). (*Punggu.*)

This bird was brought to me alive, but refused to eat anything; so I killed and stuffed it. It uttered no sound while I had it.

11. SCOPS LEMPIJI (Horsf.), juv.

Caught by my servant. I do not know this Owl in the adult state.

Fam. PSITTACIDÆ.

12. PALÆORNIS LONGICAUDUS (Bodd.), Buff. Pl. Enl. 287. (*Betet.*)

Much more common here than at Labuan, and flying in immense

flocks: they are caught with bird-lime, and sold by hundreds for the table. Their habits are somewhat modified here by the nature of their food, which is chiefly the fruit of various shrubby *Myrtaceæ*; but they always fly very high and swiftly, screaming loudly. I have neglected to get a female. She wants the long tail-feathers, and the colours are more dingy; the red patch under the eye is also very small. This bird breeds in hollow trees.

13. *PALÆORNIS JAVANICUS* (Osbeck). (*Baian.*)

My hunter procured these birds near Banjermassing: their habits, he states to me, resemble those of the last species, and they fly in equally large flocks.

14. *PSITTINUS MALACCENSIS* (Lath.). (*Chaling.*)

This little Parrot is much more rare here than the other species. My hunter says he has never procured it except in the neighbourhood of Banjoenan. It can be taught to speak.

15. *LORICULUS GALGULUS* (Linn.). (*Seringit.*)

Very common here, frequenting open grassy places with small scattered trees, in the holes of which it breeds. Almost every native house here has its little round cage with one or two of these little birds. They are easily caught with lime-sticks placed round a caged bird, which is hung at the top of a long pole.

Fam. CUCULIDÆ.

16. *RHINORTHA CHLOROPHÆA* (Raffles).

Often seen, but apparently of very wandering habits, as they are rarely met with two days together in the same place. They fly in small flocks, and seem generally to be employed searching for caterpillars upon the leaves of trees. In all I have killed (a large number) the stomachs were filled with these insects, and with the bodies of *Lepidoptera*. The only note I have heard from them is a quick chirp.

17. *PHÆNICOPHAUS ERYTHROGNATHUS*, Temm.; Bp. Consp. p. 98.

A rather common bird about Martapura in the dry gravelly thickets, concealing itself among the bushwoods, and when disturbed taking very short flights. Its note is a hoarse chatter, much like that of a Magpie.

18. *ZANCLOSTOMUS SUMATRANUS* (Raffl.), Bp. Consp. p. 99. (*Talatak Bahohong.*)

Procured by my hunter on the Rium-kiwa River. I know nothing of its habits.

19. *ZANCLOSTOMUS TRISTIS* (Less.), Bp. Consp. p. 99.

Procured by my hunter in the marshes near Banjermassing: he says it has a different note from the last species, and a different flight; and

that the natives give it a different name, which, however, he does not recollect. There appears to be a difference in the nostrils.

20. *OXYLOPHUS COROMANDUS* (Linn.), Bp. Consp. p. 102.

This species, from the Dyak River, was previously unknown to my hunter.

21. *CACOMANTIS SEPULCHRALIS* (Müll.), Bp. Consp. p. 104.

Rare: they haunt open padangs, where they perch on very low bushes.

22. *HIEROCOCCYX VARIUS* (Vahl), Moore, P. Z. S. 1859, p. 459. *H. fugax*, Bp. Consp. p. 104. (*Rangang*.)

A common bird, though rarely seen, from its habit of lying as it were on the upper side of a large branch to utter its monotonous cry. I have repeatedly tried in vain to discover it, when certainly a dozen must have been crying at once all around me. Its note is a loud but soft flute-like whistle, repeated three times, and then once again, two notes lower, and is continued for several hours together in the evening.

23. *SURNICULUS LUGUBRIS* (Horsf.), Bp. Consp. p. 105. (*Jandarassi hitam*.)

Shot near Martapura: they appear to have the habits of our Fly-catchers.

24. *CHRYSOCOCCYX XANTHORHYNCHUS* (Horsf.), Bp. Consp. p. 106. (*Behet*.)

This bird is apparently rare. The present specimen was full of flies.

25. *CHRYSOCOCCYX CHALCITES* (Temm.), Temm. Pl. Col. 102; Bp. Consp. p. 106.

Small bird, not known to my hunter.

[A young bird, probably referable to this species.—P. L. S.]

26. *CENTROPUS PHILIPPENSIS* (Cuv.), Bp. Consp. p. 107.

Here exceedingly common. Its monotonous note "boo-boo," repeated sometimes for hours together, may be almost constantly heard in wet bushy places; hence the native name Booboot. It is said to feed very much on the eggs of other birds. Its nest is large and bottle-shaped, built of moss-leaves and rubbish, and though often placed in conspicuous places, may be easily passed from its resemblance to a chance mass of leaves.

27. *CENTROPUS AFFINIS* (Horsf.). *Cuculus affinis* (♂) et *C. lepidus* (♀), Horsf. Trans. Linn. Soc. xiii. p. 180.

This species, the note of which is almost exactly like that of the last, is found very commonly in the "padangs" or extensive grassy

clearings. In flying, it rises only just over the grass, and never perches in sight, always diving suddenly into some thick tuft or bush. It is often much mobbed by other small birds. Its nest is bottle-shaped, and placed among grass, of which it is chiefly built, rarely quite upon the ground. Its Malay name is "*Telutok*."

Fam. CAPITONIDÆ.

28. *MEGALÆMA VERSICOLOR* (Raffl.), Bp. Consp. p. 143. (*Tukang Kagu*.)

Exceedingly common here; feeds chiefly on insects, but also on the fruit of various species of *Ficus*. When these are ripe, several dozen of the birds may often be seen on the trees together. They breed in holes, which they excavate in the rotten wood of trees.

29. *MEGALÆMA CHRYSOPSIS*, Goffin, Mus. des Pays-Bas, Buccones, p. 15. (*Tokon Tokon mas*.)

Rare: procured by my hunter far up the Riam-Kiwa River. [Barely separable from *Megalæma chrysopogon*, Temm.—P. L. S.]

30. *MEGALÆMA MYSTACOPHANES* (Temm.), Pl. Col. 315. (*Tokon Tokon Kechel*.)

Obtained by my hunter near Martapura.

31. *MEGALORHYNCHUS SANGUINOLENTUS* (Less.). (*Tapeas*.)

Rather uncommon. I shot both these specimens in a tall Fig-tree (*Ficus*) covered with fruit; but I doubt their feeding on it, as their stomachs were full of insects.

[There seems no doubt that this Bornean bird—the *Caloramphus sanguinolentus*, Less. (Rev. Zool. 1839, p. 139)—is distinct from the Malaccan *M. hayi*, although these species have been repeatedly united. The Malaccan bird never shows the red colour on the throat, which seems constant in Bornean specimens.—P. L. S.]

Fam. PICIDÆ.

32. *MEIGLYPTES BRUNNEUS* (Eyton), Bp. Consp. p. 113.

In fruit-orchards; not rare.

33. *MEIGLYPTES BADIUSUS* (Temm.), Bp. Consp. p. 113. (*Balatak busuh*—Stinking Woodpecker.)

A common bird, rather nocturnal in its habits. When newly killed, it has an abominable smell of formic acid, doubtless from the nature of its food.

[Mr. Wallace has specimens of this bird obtained at Sarawak.—P. L. S.]

34. *TIGA TRIDACTYLA*, Gray: Bp. Consp. p. 120.

Procured at Abulong, on the Banjermassing River. It appears to be a species frequenting the tidal marshes.

35. *VENILIA MALACCENSIS* (Lath.). *Picus malaccensis*, Lath. Ind. Orn. i. p. 241; *Venilia miniata*, ex Malacca, auct.

Very common, frequenting small scattered trees in open places.

[These specimens agree with those of Sumatra and Malacca in having the hinder part of the crest yellow, and the back greenish. In the Javan representative species, *Venilia miniata* (*Picus miniatus*, Gm. ex Forst.), the whole crest and the greater part of the back are red. Malherbe figures the present bird (*Picidæ*, ii. pl. 76), but calls it wrongly *miniata*.—P. L. S.]

36. *HEMICERCUS COCCOMETOPUS*, Reichb.

Shot at Gunong Pamalong.

[Mr. Wallace's collection contains three forms of this species: 1st, that of Sumatra and Borneo, which has the rump reddish buff or reddish white, the belly buffy brown, and the crest of the male tipped with dusky; 2nd, that from Malacca, in which the belly is decidedly olivaceous, the rump yellowish, but the crest similar to the last; 3rd, that of Java, in which the rump is nearly white, the crest very ample and wholly red, and the bill shorter. Now Temminck's *Picus concretus* (Pl. Col. 90) is, as he himself states, the Javan species, and we must therefore call the Javan form *Hemicercus concretus*. The Malayan bird should bear the name *Hemicercus sordidus*, having been described by Mr. Eyton in its immature stages as *Dendrocopus sordidus*, his paper on the birds of Malacca in the 'Annals of Natural History' for 1845 (vol. xvi. p. 229). The Sumatran and Bornean species seems to be Reichenbach's *Hemicercus coccometopus* (Handb. d. Sp. Orn. p. 401). M. Malherbe, in his work on the *Picidæ*, appears to have only been acquainted with two forms; and his name *hartlaubii* is certainly synonymous with *sordidus*, though his figure (pl. 61. fig. 5) represents the whole crest as red.—P. L. S.]

37. *HEMILOPHUS JAVENSIS* (Horsf.), Moore, Cat. p. 652. (*Balatak kigang*.)

This Woodpecker, of which I think I sent the female only from Labuan, is here also a very rare bird. My man prided himself very much upon getting a pair of them.

38. *HEMILOPHUS VALIDUS* (Temm.), Pl. Col. 378, 402; Bp. Consp. p. 131.

Killed by my hunter on the Riam-Kiwa River.

39. *SASIA ABNORMIS* (Temm.), Bp. Consp. p. 140.

From the Dyak River; said to frequent low bushes.

Fam. CAPRIMULGIDÆ.

40. *BATRACHOSTOMUS JAVENSIS* (Horsf.). *Podargus javensis*, Horsf. Zool. Res. pl. 6; Bp. Consp. p. 57.

This strange-looking bird is quite nocturnal in its habits. I have

once or twice seen it, evidently asleep, on a low branch in the low dark thickets about Martapura, and each time with the huge mouth wide open.

[Mr. Mottley's collection contains two pairs of this bird. The sexes, as has been noted by Bonaparte, are very different in colouring, the male being minutely freckled with brown and black, and the female bright rufous. Horsfield's figure represents the female. Mr. Mottley's female specimens agree with Dr. Horsfield's type. *Batrachostomus stellatus* (*Podargus stellatus*, Gould, P. Z. S. 1837, p. 43) of Malacca is obviously a different species, as I have ascertained by examining the typical examples in the British Museum. *B. auritus*, Gould (Icon. Av. ii. pl. 7), is also easily known by its larger size. *B. crinifrons*, Temm. (*B. psilopterus*, G. R. Gray), from Batchian and Gilolo, is likewise a well-marked species. Whether the other three species given by Cabanis and Heine (Mus. Hein. ii. pp. 123-4) are good or not I cannot say. They have omitted to enumerate in their list *Batrachostomus moniliger* of Ceylon.—P. L. S.]

41. *CAPRIMULGUS AFFINIS* (Horsf.), Moore & Horsf. Cat. p. 114. (*Chabak*.)

An exceedingly common bird on our bare and long hills, where it breeds. It sits during the day among the stones, not rising until nearly trodden upon. In the evening some hundreds may be seen on the wing about my house, sweeping in wide circles, and constantly repeating a shrill chirp, which may be heard, when there is moonlight, through the night. At this time they often perch on prominent objects, such as the poles of the fences and the carved pieces of wood with which the Malays ornament their roofs, but this I have never seen them do in the daytime. The eggs are laid without nest among the bare stones, and are, as well as the young, like those of our English species; the mother, too, employs the same arts to tempt intruders away from her treasures.

42. *CAPRIMULGUS*, sp. ? (*Taktan*.)

Appears to be rare: my hunter procured this specimen at Pengaron.

[This is a well-marked species of *Caprimulgus*, with the inner web of the outer tail-feather in the male terminated by a square white mark. It does not seem to be in the British Museum; but I am unwilling to add to the confusion already prevalent in this group by describing isolated species.—P. L. S.]

Fam. *CYPSELIDÆ*.

43. *MACROPTERYX KLECHO* (Horsf.). (*Lanigan*.)

Common in the dry season. I believe the *Cypselidæ* are all more or less migratory here.

44. *COLLOCALIA NIDIFICA*, G. R. Gray: Moore, Cat. p. 98.

Fam. ALCEDINIDÆ.

45. HALCYON LEUCOCEPHALA (Gm.), Bp. Consp. p. 154. (*Bakaka*.)

This is one of our commonest Kingfishers, and to be seen everywhere, both in fresh and brackish water, though I think rarely where the water is truly salt. It perches usually on rather high, exposed branches, and is wild and not easy to approach, flying off with a loud chatter precisely resembling its name *Bakaka*. The Malay races are particularly happy in onomatopœias of this kind. It is also called "*Rajah udong*" (king of the shrimps)—a true King-Stork, I should suppose.

46. HALCYON LILACINA, Bp. Consp. p. 156.

Procured by my hunter at Banjermassing: he says it is rare here.

47. HALCYON COLLARIS (Scop.), Moore, Cat. p. 127. (*Bakaka padang*.)

Procured on the Dyak River by my hunter, who says that this species particularly frequents the paddy-fields, and feeds on frogs.

48. CEYX RUFIDORSA, Strickl.: Bp. Consp. p. 158. (*Bintei*.)

Not uncommon, frequenting the small streams in the woods, and making its nest in holes in banks.

Fam. TROGONIDÆ.

49. HARPACTES DUVAUCELII (Temm.), Gould, Mon. Trog. ed. 2. pt. 1. (*Santalehai*.)

Brought by my hunter from the Great Dyak River, where it is said to be abundant: it is a favourite bird of omen with the Dyaks.

50. HARPACTES KASUMBA (Raffles), Gould, B. Asia, pt. 8.

From Bangkank, on the Riam Kiwa; one of the principal birds of omen of the Dyaks.

Fam. MEROPIDÆ.

51. MEROPS JAVANICUS (Horsf.). (*Pink-Pink*.)

A very common bird in open places, sailing in circles to hunt the larger Coleoptera and Hymenoptera. It also makes great havoc among the Dragonflies with which the air is sometimes filled here. When these birds have seized their prey, they return to their stand, usually a bare high branch, and there kill it by beating it against the twigs. Great numbers of them may sometimes be seen together in the evening flying in one direction, uttering the cry which gives their name.

52. MEROPS BADIUS, Gm.

Uncommon: my specimens were brought by my hunter from Bangkank, on the Riam Kiwa River.

53. NYCTIORNIS AMICTA (Temm.).

This bird is rather common at Gunong Tabok, on the Riam Kanan River, but I suppose rare elsewhere. My hunter says it is not known far in the interior. Its note is something between the croak of a frog and the "churr" of a Fern-Owl, often repeated, and sustained perhaps half a minute.

Fam. CORACIIDÆ.

54. EURYSTOMUS ORIENTALIS (Linn.).

A rare bird here.

Fam. BUCEROTIDÆ.

55. HYDROCISSA GALERITA, Temm.

Rare on the coast, but a common bird far in the interior. In both Borneo and Sumatra it may be seen perched, in the early morning, on the summits of the tallest trees; and its loud hoarse cry, like a coarse, rude laugh, makes the wood echo in every direction. This is a sacred bird with the Dyaks, who ornament their war-dresses and helmets with the beak and long tail-feathers; the large wide quills are almost universally used for holding gold-dust and small diamonds.

Fam. EURYLEMIDÆ.

56. CORYDON SUMATRANUS (Raffl.). (*Tiong Pujong.*)

Shot by my hunter.

[These specimens have the concealed dorsal spot red. In Mr. Wallace's Malaccan examples it is orange.—P. L. S.]

57. CYMBIRHYNCHUS MACRORHYNCHUS (Gm.). (*Pandei-Pandei.*)

Here a common bird, almost always to be seen about fruit-orchards and similar places, often in flocks of five or six: it feeds apparently on insects. In fresh specimens the beak is bright blue.

58. CALYPTOMENA VIRIDIS, Raffl. (*Tantewy.*)

Shot by my hunter on the Dyak River.

Fam. ALAUDIDÆ.

59. MIRAFRA JAVANICA (Horsf.).

This bird has much the habits of our common Sky-Lark.

Fam. MOTACILLIDÆ.

60. BUDYTES VIRIDIS (Scop.). (*Pranjak.*)

Very common among grass, associating in small flocks, and hunting insects with a short jumping flight.

Fam. TIMALIIDÆ.

61. TIMALIA MACULATA, Temm. Pl. Col. 593. fig. 1.

Brought from the Dyak by my hunter.

62. TIMALIA NIGRICOLLIS, Temm. Pl. Col. 594. fig. 2.

Shot by my hunter at Banjermassing.

63. TIMALIA, sp.? (*Sikotan gunong*.)

Shot by the hunter on the Riam Kanan.

[Allied to *T. erythroptera*, Blyth, of Malacca, but differs, according to Mr. Wallace, who has kindly compared it, in having the back rusty red, of the same colour as the wings, and a much darker head.—P. L. S.]

64. MIXORNIS BORNEENSIS, Bp. Consp. p. 217.

Shot by my hunter at Banjermassing.

65. MACRONUS PTILOSUS, Jard. & Selb. (*Burong chamara*.)

Not uncommon, according to my hunter; but I have not seen it alive.

66. TRICHOSTOMA UMBRATILE, Strickland, Contr. to Orn. 1849, p. 126, pl. 35. (*Kruang taush*.)

My hunter says this bird is common, though I have never seen it; he says it never flies above the grass.

[Mr. Wallace notes this species as being very close to *T. abbottii*, Blyth, from which it only differs in more rufous wings and flanks, and less greyish white on the lores.—P. L. S.]

Fam. PITTIDÆ.

67. PITTA SCHWANERI, Temm. : Bp. Consp. p. 256.

Rare, but generally distributed in dry woody places. Like *P. mülleri*, it rarely perches upon trees.

68. PITTA MUELLERI, Bp. Consp. p. 256.

Rather rare: haunts bushy places.

[A young bird of this species in Mr. Mottley's collection has the tips of the wing-covers white, as in Elliot's *Pitta leucoptera*. I have little doubt that the latter (described in Proc. Acad. Sc. Phil. 1861, p. 153, and figured in the 'Monograph,' pl. 25) is the young of *Pitta philippensis*.—P. L. S.]

Fam. MEGALURIDÆ.

69. ORTHOTOMUS CINERACEUS, Blyth: Moore's Cat. p. 315.

A very common bird among grass, over the tops of which it flies with a quick jerking flight, often throwing up the tail.

[Compared by Mr. Wallace with specimens in the E. I. M.—P. L. S.]

70. PRINIA — ? (*Chunuk betul.*)

A common little bird in the long grass ; it flies with a peculiar jerking flight, like a Grasshopper.

[A species not in the E. I. M.—P. L. S.]

Fam. PYCNONOTIDÆ.

71. PYCNONOTUS ANALIS (Horsf.). *Ixos analis*, Bp. Consp. p. 265.

Shot by my hunter near Martapura.

[This bird is often called *P. goiavier* (Scop.). But Sonnini's figure, on which Scopoli's name is based, represents a bird from Manilla, which is probably of a different species. I therefore prefer to use Horsfield's name *analis* for this bird.—P. L. S.]

72. CRINIGER GUTTURALIS, Bp. Consp. p. 262.

Fam. TURDIDÆ.

73. COPSYCHUS AMÆNUS, Horsf.: Moore's Cat. p. 279. *C. pluto*, Temm. (*Tingon.*)

An exceedingly common bird here, and apparently all over the Archipelago. It frequents the neighbourhood of houses more than most of the native birds ; and its song is very sweet, something like part of that of a Blackbird. It is a very lively and active bird, and very conspicuous as it sits on the top of a stump to sing, perpetually jerking up its tail like a Magpie, to which in miniature it bears a considerable resemblance. The nest is of grass, and is placed in a fork or hole of a tree ; the eggs are five or six, and resemble those of our Yellowhammer (*Emberiza citrinella*).

[Mr. Wallace tells me that Bornean and Javan specimens of this bird agree ; so that *C. pluto*, the fifth species in my list of this genus (given P. Z. S. 1861, p. 186), must be united to the fourth.—P. L. S.]

74. COPSYCHUS SUAVIS, Sclater, P. Z. S. 1861, p. 185. (*Tingon.*)

A much wilder species than the last, and more rarely seen, though nearly as common.

Fam. ORIOLIDÆ.

75. ORIOLUS XANTHONOTUS, Horsf.

A rare bird, and oftener heard than seen, as it sits usually in a thick dark tree, repeating at short intervals a low melancholy whistle. I have several times tried in vain to see this bird, when perfectly sure, from its constantly repeated cry, that it was in the tree I was examining, and have only induced it to take flight by firing at random among the branches. One of the specimens sent was, oddly enough, killed in this way, without being aimed at or seen.

Fam. ARTAMIDÆ.

76. ARTAMUS LEUCOGASTER, Val. : Bp. Consp. p. 343. (*Alangkechil*.)

This bird was sent in my former collection from Labuan, where it was common; here I have seen it only once.

Fam. HIRUNDINIDÆ.

77. HIRUNDO DOMICOLA, Jerdon, Madras Journ. xiii. p. 173.

Brought by my hunter from the Dyak.

78. HIRUNDO RUSTICA (Linn.). (*H. gutturalis*, Scop.)

[Mr. Blyth considers this Eastern variety of the Common Swallow hardly separable from the European bird, though many authors have assigned it a different name. See Cat. Mus. As. Soc. Beng. p. 197, and Jerdon, Birds of India, p. 157.—P. L. S.]

79. RHIPIDURA JAVANICA (Sparm.), Horsf. & Moore, Cat. p. 144.

Shot near Banjoenan.

80. TCHITREA AFFINIS, A. Hay : Horsf. & Moore, Cat. p. 134. (*Tabulu*.)

A rare bird here, but very conspicuous from its long tail and slow flight. It associates in small parties of five or six, and frequents low open woods. Its feathers are much valued by the Dyaks.

Fam. LANIIDÆ.

81. TEPHRODORNIS HIRUNDINACEA, Temm. : Bp. Consp. p. 357.

Found here and there in the low woods, associating in pairs, but not a common bird.

82. PACHYCEPHALA GRISOLA (Blyth). *Tephrodornis grisola*, Blyth, J. A. S. B. xii. p. 180; Jerdon, B. Ind. i. p. 411.

Rather uncommon: has a sweet simple song, something like that of the Redbreast (*Erithacus rubecula*).

[I suspect this is *Hyloterpe philomela*, Cab. (Mus. Hein. i. p. 64); but, as far as I can make out, that bird has never been described. A bird is mentioned as *Hylocharis luscinia* in S. Müller's article on his Sumatran discoveries, in the Tijdschrift v. Nat. Geschied. 1835, p. 331; but no description of it is given.—P. L. S.]

83. IRENA PUELLA (Lath.), Bp. Consp. p. 349. (*Burong Birn*—Blue bird.)

The birds are common enough here, though not very often seen, except when the wild fruit is ripe, when they collect in great numbers. Their favourite food appears to be a species of *Syzygium*: when feeding on this, they are very fat, and are caught in great numbers, for eating, with bird-lime.

84. *EDOLIUS BRACHYPHORUS*, Temm. : Bp. Consp. p. 351. (*Damak-Damak*, from a fancied resemblance in the long tail-feathers to the little arrows blown from the Sumpitan, which are so named.)

This bird is not uncommon here, and I have seen it also in the north of Borneo, its peculiar jerking flight, like that of a Woodpecker, and its long tail-feathers making it very conspicuous. These birds feed on insects, and, my hunter says, sometimes on small birds. They are the bravest birds I have ever seen : one of them does not hesitate to attack the largest Hawk that ventures near its stand, and usually succeeds in driving off the intruder by repeated blows on the head with his strong beak.

85. *CHAPTIA MALAYENSIS*, A. Hay : Bp. Consp. p. 350. (*Tangkaschang*.)

Apparently rare : one specimen that I shot was being mobbed by smaller birds.

86. *GRAUCALUS FASCIATUS*, Vieill. : Bp. Consp. p. 354.

87. *VOLVOCIVORA FIMBRIATA*, Temm. : Bp. Consp. p. 356.

Fam. CORVIDÆ.

88. *CRYPHIRHINA ATERRIMA*, Temm. : Bp. Consp. p. 369. (*Tiung hautu*.)

Not uncommon in the deep woods, but rarely seen near houses. These are very active and lively birds, but exceedingly wild and difficult to approach ; their note is a kind of hoarse whistle often repeated.

89. *CORVUS VALIDUS*, Temm. : Bp. Consp. p. 385. (*Kak*.)

Exceedingly wild, and rarely seen near houses. These Crows fly usually in flocks of from three to six individuals, and are very noisy on the wing. Their cry is exactly that of our Common Rook (*C. frugilegus*), and gives me a home-feeling every time I hear it ; but their flight more nearly resembles that of the Common Crow (*C. corone*). The stomachs of those I have killed were full of insects and fruit ; but one, which had, as I afterwards found, a nest with young ones close by, was carrying in its beak a piece of stinking fish. The nest was in a tall tree built of sticks and grass, and contained four young ones. When taken young from the nest, these birds become very tame ; but are most mischievous, tearing into small pieces everything they can get hold of.

Fam. STURNIDÆ.

90. *CALORNIS CANTOR*, Gm.

I have nothing to add to my former remarks on this bird. It is not so abundant here as at Labuan : it seems to frequent hollow trees almost exclusively.

91. GRACULA JAVANENSIS (Osbeck), Bp. Consp. p. 422.

Very common here, as in Labuan.

Fam. FRINGILLIDÆ.

92. MUNIA ORYZIVORA (Linn.).

Rather common here, and exceedingly destructive to the rice-fields, feeding on them in vast flocks. These birds are taken in thousands by the natives, and are a favourite article of food, being exceedingly fat. In confinement they become very familiar, and breed readily. I have a great number of them; and many which have escaped do not leave the house, but are constantly on the outside of the cage which formerly held them.

93. MUNIA MALACCA (Linn.).

94. MUNIA FUSCANS, Cassin.

Spermestes fuscans, Cassin, Pr. Acad. Phil. vi. p. 85, et Journ. Acad. Phil. iii. p. 69, pl. 8. fig. 3.

Common here, though less so than the last species. Its habits are the same; but its nest is commonly placed in hollow trees.

[Mr. Wallace has similarly-coloured specimens of both sexes of this little Finch in his collection from Sarawak.—P. L. S.]

Fam. MELLIPHAGIDÆ.

95. PHYLLORNIS JAVENSIS (Horsf.), Horsf. & Moore, Cat. p. 260.

Not very uncommon here, and almost always to be found where any of the *Loranthaceæ* are in fruit.

96. IORA VIRIDISSIMA (Temm.).

Procured by my hunter (who said the note and flight attracted his attention, and that the species was new to him) at the foot of the Goenong Gurgaji Mountain.

97. ZOSTEROPS —, sp. ?

Burong barat, "west bird," only seen here during the west monsoon; it frequents especially the flowers of the Lausat (*Lausium domesticum*).

[This *Zosterops* is closely allied to *Z. flava* of Java, but is distinguishable by its brighter colouring above and below, the lores being yellow instead of black, and the wing- and tail-feathers within being brown and not black. It is of the same size as *Z. flava*, and therefore can hardly be *Z. montana* of Sumatra, which is stated by Bonaparte to be "*similis Z. flavæ, sed paullo major.*"—P. L. S.]

Fam. NECTARINIIDÆ.

98. DICÆUM CRUENTATUM (Linn.), Bp. Consp. p. 402.

Rather common in some localities. The nest of this very lively

and pugnacious little bird is a most beautiful fabric, made with an opening in the side, and suspended from a twig, being built chiefly of lichens and spiders' webs.

99. *DICÆUM TRIGONOSTYGMA* (Scop.), Bp. Consp. p. 403.

Shot by my hunter.

100. *NECTARINIA MACKLOTII*, Bp. Consp. p. 408.

101. *NECTARINIA HASSELTII*, Temm. : Bp. Consp. p. 409.

My hunter says, this is the only specimen he has seen here of this bird.

102. *NECTARINIA SIPARAJA* (Raffl.), Bp. Consp. p. 405.

Common among mangroves.

[Mr. Wallace says, "perhaps distinct from *N. siparaja*, the tail being rather more elongated."—P. L. S.]

103. *NECTARINIA PECTORALIS* (Horsf.), Bp. Consp. p. 408.

Found also in Labuan; here it frequents chiefly the flowers of the Laban (*Vitex tomentosa*).

104. *NECTARINIA PHÆNICOTIS* (Temm.), Bp. Consp. p. 408.

105. *ANTHREPTES LEPIDA* (Lath.), Bp. Consp. p. 409.

Apparently not rare. These little *Nectariniæ* are all called by one native name, have the same restless habits as the Labuan species, and are always to be found where there are flowers. They feed, however, also on small insects.

106. *ARACHNOTHERA LONGIROSTRIS* (Lath.), Bp. Consp. p. 409. (*Chewit tandok*.)

Common in a small wood near my house, amongst the bamboos: I have rarely seen it elsewhere.

Fam. COLUMBIDÆ.

107. *TRERON NIPALENSIS*, Hodgs. (*Punei dakan*.)

A very common Pigeon; perhaps the most so of all our species. It has the same habits as the other kinds.

108. *TRERON VERNANS* (Gm.), Bp. Consp. ii. p. 12. (*Punei daduk*.)

Very abundant: of the same solitary and fruit-eating habits as all our Pigeons, but remarkable for frequently perching on the ground.

109. *TRERON FULVICOLLIS* (Wagl.), Bp. Consp. ii. p. 14.

110. *TRERON OLAX* (Temm.), Pl. Col. 241; Gray, List of Columbæ, p. 11. (*Punei kechil*.)

In habits like the larger species, but far more rare.